

<110> Edinger et al.

## SEQUENCE LISTING

amdta #6

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Glu Met Ala Asp Thr Arg Ser Val His Glu Thr Arg Phe Glu Ala Ala 35 40 45

Val Lys Val Ile Gln Ser Leu Pro Lys Asn Gly Ser Phe Gln Pro Thr 50 55 60

Asn Glu Met Met Leu Lys Phe Tyr Ser Phe Tyr Lys Gln Ala Thr Glu 65 70 75 80

Gly Pro Cys Lys Leu Ser Arg Pro Gly Phe Trp Asp Pro Ile Gly Arg 85 90 95

Tyr Lys Trp Asp Ala Trp Ser Ser Leu Gly Asp Met Thr Lys Glu Glu
100 105 110

Ala Met Ile Ala Tyr Val Glu Glu Met Lys Lys Ile Ile Glu Thr Met 115 120 125

Pro Met Thr Glu Lys Val Glu Glu Leu Leu Arg Val Ile Gly Pro Phe 130 135 140

Tyr Glu Ile Val Glu Asp Lys Lys Ser Gly Arg Ser Ser Asp Ile Thr 145 150 155 160

Ser Asp Leu Gly Asn Val Leu Thr Ser Ala Pro Asn Ala Lys Thr Val 165 170 175

Asn Gly Lys Ala Glu Ser Ser Asp Ser Gly Ala Glu Ser Glu Glu Glu 180 185 190

Glu Ala Gln Glu Glu Val Lys Gly Ala Glu Gln Ser Asp Asn Asp Lys 195 200 205

Lys Met Met Lys Lys Ser Ala Asp His Lys Asn Leu Glu Val Ile Val 210 215 220

Thr Asn Gly Tyr Asp Lys Asp Gly Phe Val Gln Asp Ile Gln Asn Asp

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His Gln Asp Ile 275	Asn Asp Asp	His Val Glu 280	Asp Val Thr 0 285	Gly Ile Gln
His Leu Thr Ser 290	Asp Ser Asp 295	Ser Glu Val	Tyr Cys Asp 3	Ser Met Glu
Gln Phe Gly Gln 305	Glu Glu Ser 310	Leu Asp Ser	Phe Thr Ser 2	Asn Asn Gly 320
Pro Phe Gln Tyr	Tyr Leu Gly 325	Gly His Ser 330	Ser Gln Pro 1	Met Glu Asn 335
Ser Gly Phe Arg 340	Glu Asp Ile	Gln Val Pro 345		Gly Asn Ile 350
Gly Asn Met Gln 355	Val Val Ala	Val Glu Gly 360	Lys Gly Glu v 365	Val Lys His
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Met Gln Asn Val 450	Leu Gln Arg 455	Leu Gln Lys	Leu Glu Thr I 460	Leu Thr Ala
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<213> Homo sapiens

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Glu Met Ala Asp Thr Arg Ser Val His Glu Thr Arg Phe Glu Ala Ala 35 40 45

Val Lys Val Ile Gln Ser Leu Pro Lys Asn Asp Ser Phe Gln Pro Thr 50 55 60

Asn Glu Met Met Leu Lys Phe Tyr Ser Phe Tyr Lys Gln Ala Thr Glu 65 70 75 80

Gly Pro Cys Lys Leu Ser Arg Pro Gly Phe Trp Asp Pro Ile Gly Arg 85 90 95

Tyr Lys Trp Asp Ala Trp Ser Ser Leu Gly Asp Met Thr Lys Glu Glu
100 105 110

Ala Met Ile Ala Tyr Val Glu Glu Met Lys Lys Ile Ile Glu Thr Met 115 120 125

Pro Met Thr Glu Lys Val Glu Glu Leu Leu Arg Val Ile Gly Pro Phe 130 135 140

Tyr Glu Ile Val Glu Asp Lys Lys Ser Gly Arg Ser Ser Asp Ile Thr 145 150 155 160

Ser Val Arg Leu Glu Lys Ile Ser Lys Cys Leu Glu Asp Leu Gly Asn 165 170 175

Val Leu Thr Ser Thr Pro Asn Ala Lys Thr Val Asn Gly Lys Ala Glu 180 185 190

Ser Ser Asp Ser Gly Ala Glu Ser Glu Glu Glu Glu Ala Gln Glu Glu 195 200 205

Val Lys Gly Ala Glu Gln Ser Asp Asn Asp Lys Lys Met Met Lys Lys 210 220

Ser Ala Asp His Lys Asn Leu Glu Val Ile Val Thr Asn Gly Tyr Asp 225 230 235 240

Lys	Asp	Gly	Phe	Val 245	Gln	Asp	Ile	Gln	Asn 250	Asp	Ile	His	Ala	Ser 255	Ser
Ser	Leu	Asn	Gly 260	Arg	Ser	Thr	Glu	Glu 265	Val	Lys	Pro	Ile	Asp 270	Glu	Asn
Leu	Gly	Gln 275	Thr	Gly	Lys	Ser	Ala 280	Val	Cys	Ile	His	Gln 285	Asp	Ile	Asn
Asp	Asp 290	His	Val	Glu	Asp	Val 295	Thr	Gly	Ile	Gln	His 300	Leu	Thr	Ser	Asp
Ser 305	Asp	Ser	Glu	Val	Tyr 310	Cys	Asp	Ser	Met	Glu 315	Gln	Phe	Gly	Gln	Glu 320
Glu	Ser	Leu	Asp	Ser 325	Phe	Thr	Ser	Asn	Asn 330	Gly	Pro	Phe	Gln	Tyr 335	Tyr
Leu	Gly	Gly	His 340	Ser	Ser	Gln	Pro	Met 345	Glu	Asn	Ser	Gly	Phe 350	Arg	Glu
Asp	Ile	Gln 355	Val	Pro	Pro	Gly	Asn 360	Gly	Asn	Ile	Gly	Asn 365	Met	Gln	Val
Val	Ala 370	Val	Glu	Gly	Lys	Gly 375	Glu	Val	Lys	His	Gly 380	Gly	Glu	Asp	Gly
Arg 385	Asn	Asn	Ser	Gly	Ala 390	Pro	His	Arg	Glu	Lys 395	Arg	Gly	Gly	Glu	Thr 400
Asp	Glu	Phe	Ser	Asn 405	Val	Arg	Arg	Gly	Arg 410	Gly	His	Arg	Met	Gln 415	His
Leu	Ser	Glu	Gly 420	Thr	Lys	Gly	Arg	Gln 425	Val	Gly	Ser	Gly	Gly 430	Asp	Gly
Glu	Arg	Trp 435	Gly	Ser	Asp	Arg	Gly 440	Ser	Arg	Gly	Ser	Leu 445	Asn	Glu	Gln
Ile	Ala 450	Leu	Val	Leu	Met	Arg 455	Leu	Gln	Glu	Asp	Met 460	Gln	Asn	Val	Leu
Gln 465	Arg	Leu	Gln	Lys	Leu 470	Glu	Thr	Leu	Thr	Ala 475	Leu	Gln	Ala	Lys	Ser 480
Ser	Thr	Ser	Thr	Leu 485	Gln	Thr	Ala	Pro	Gln 490	Pro	Thr	Ser	Gln	Arg 495	Pro
Ser	Trp	Trp	Pro 500	Phe	Glu	Met	Ser	Pro 505	Gly	Val	Leu	Thr	Phe 510	Ala	Ile
Ile	Trp	Pro 515	Phe	Ile	Ala	Gln	Trp 520	Leu	Val	Tyr	Leu	Tyr <sup>.</sup> 525	Tyr	Gln	Arg

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Ala Ala Val Lys Val Ile Gln Ser Leu Pro Lys Asn Gly Ser Phe Gln
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Thr Glu Gly Pro Cys Lys Leu Ser Arg Pro Gly Phe Trp Asp Pro Ile
Gly Arg Tyr Lys Trp Asp Ala Trp Ser Ser Leu Gly Asp Met Thr Lys
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Glu Glu Ala Met Ile Ala Tyr Val Glu Glu Met Lys Lys Ile Ile Glu
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Thr Met Pro Met Thr Glu Lys Val Glu Glu Leu Leu Arg Val Ile Gly
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                                                         175
Gly Asn Val Leu Thr Ser Thr Pro Asn Ala Lys Thr Val Asn Gly Lys
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Ala Glu Ser Ser Asp Ser Gly Ala Glu Ser Glu Glu Glu Glu Ala Gln
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Lys Lys Ser Ala Asp His Lys Asn Leu Glu Val Ile Val Thr Asn Gly
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Tyr Asp Lys Asp Gly Phe Val Gln Asp Ile Gln Asn Asp Ile His Ala
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265

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Gln Glu Glu Ser Leu Asp Ser Phe Thr Ser Asn Asn Gly Pro Phe Gln 325 330 335

Tyr Tyr Leu Gly Gly His Ser Ser Gln Pro Met Glu Asn Ser Gly Phe 340 345 350

Arg Glu Asp Ile Gln Val Pro Pro Gly Asn Gly Asn Ile Gly Asn Met 355 360 365

Gln Val Val Ala Val Glu Gly Lys Gly Glu Val Lys His Gly Glu Glu 370 375 380

Asp Gly Arg Asn Asn Ser Gly Ala Pro His Arg Glu Lys Arg Gly Gly 385 390 395 400

Glu Thr Asp Glu Phe Ser Asn Val Arg Arg Gly Arg Gly His Arg Met 405 410 415

Gln His Leu Ser Glu Gly Thr Lys Gly Arg Gln Val Gly Ser Gly Gly
420 425 430

Asp Gly Glu Arg Trp Gly Ser Asp Arg Gly Ser Arg Gly Ser Leu Asn 435 440 445

Glu Gln Ile Ala Leu Val Leu Met Arg Leu Gln Glu Asp Met Gln Asn 450 455 460

Val Leu Gln Arg Leu Gln Lys Leu Glu Met Leu Thr Ala Leu Gln Ala 465 470 475 480

Lys Ser Ser Thr Ser Thr Leu Gln Thr Ala Pro Gln Pro Thr Ser Gln 485 490 495

Arg Pro Ser Trp Trp Pro Phe Glu Met Ser Pro Gly Val Leu Thr Phe 500 505 510

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Gln Arg Arg Arg Lys Leu Asn 530 535

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Glu	Gly	Pro	Суѕ	Lys 85	Leu	Ser	Lys	Pro	Gly 90	Phe	Trp	Asp	Pro	Val 95	Gly
Arg	Tyr	Lys	Trp 100	Asp	Ala	Trp	Ser	Ser 105	Leu	Gly	Asp	Met	Thr 110	Lys	Glu
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Thr	Ser	Val	Arg	Leu 165	Glu	Lys	Ile	Ser	Lys 170	Суѕ	Leu	Glu	Asp	Leu 175	Gly
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Lys 225	Ser	Ala	Asp	His	Lys 230	Asn	Leu	Glu	Ile	Ile 235	Val	Thr	Asn	Gly	Tyr 240
Asp	Lys	Asp	Ser	Phe 245	Val	Gln	Gly	Val	Gln 250	Asn	Ser	Ile	His	Thr 255	Ser
Pro	Ser	Leu	Asn 260	Gly	Arg	Cys	Thr	Glu 265	Glu	Val	Lys	Ser	Val 270	Asp	Glu
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Asp Ser Asp Ser Glu Val Tyr Cys Asp Ser Met Glu Gln Phe Gly Gln 305 310 315 320

Glu Glu Ser Leu Asp Gly Phe Ile Ser Asn Asn Gly Pro Phe Ser Tyr 325 330 335

Tyr Leu Gly Gly Asn Pro Ser Gln Pro Leu Glu Ser Ser Gly Phe Pro 340 345 350

Glu Ala Val Gln Gly Leu Pro Gly Asn Gly Ser Pro Glu Asp Met Gln 355 360 365

Gly Ala Val Val Glu Gly Lys Gly Glu Val Lys Arg Gly Gly Glu Asp 370 375 380

Gly Gly Ser Asn Ser Gly Ala Pro His Arg Glu Lys Arg Ala Gly Glu 385 390 395 400

Ser Glu Glu Phe Ser Asn Ile Arg Arg Gly Arg Gly His Arg Met Gln
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His Leu Ser Glu Gly Ser Lys Gly Arg Gln Val Gly Ser Gly Gly Asp
420 425 430

Gly Glu Arg Trp Gly Ser Asp Arg Gly Ser Arg Gly Ser Leu Asn Glu 435 440 445

Gln Ile Ala Leu Val Leu Met Arg Leu Gln Glu Asp Met Gln Asn Val 450 455 460

Leu Gln Arg Leu His Lys Leu Glu Met Leu Ala Ala Ser Gln Ala Lys 465 470 475 480

Ser Ser Ala Leu Gln Thr Ser Asn Gln Pro Thr Ser Pro Arg Pro Ser 485 490 495

Trp Trp Pro Phe Glu Met Ser Pro Gly Ala Leu Thr Phe Ala Ile Ile 500 505 510

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Arg Arg Lys Leu Asn 530

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<212> PRT

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Gly Phe Cys Glu Asp Ala Gln Gln Ser Pro Gly Asn Gly Ser Ile Gly Lys Met Trp Met Val Ala Val Lys Gly Lys Gly Glu Val Lys His Gly 345 Gly Glu Asp Gly Arg Ser Ser Ser Gly Ala Pro His Arg Glu Thr Arg 360 Gly Glu Ser Glu Asp Phe Ser Ser Val Arg Arg Gly Arg Val Gly 375 Asn Arg Ile Pro His Leu Ser Glu Gly Pro Lys Gly Arg Gln Val Gly 395 390 Ser Gly Gly Asp Gly Glu Arg Trp Gly Ser Asp Arg Gly Ser Arg Gly 410 Ser Leu Asn Glu Gln Ile Ala Leu Val Leu Ile Arg Leu Gln Glu Asp 425 430 420 Met Gln Asn Val Leu Gln Arg Leu His Lys Leu Glu Thr Leu Thr Ala 440 Ser Gln Ala Lys Leu Ser Leu Gln Thr Ser Asn Gln Pro Ser Ser Gln 450 455 Arg Pro Ala Trp Trp Pro Phe Glu Met Ser Pro Gly Ala Leu Ala Phe 470 Ala Ile Ile Trp Pro Phe Ile Ala Gln Trp Leu Ala His Leu Tyr Tyr 490 Gln Arg Arg Arg Lys Leu Asn 500 <210> 7 <211> 283 <212> PRT <213> Homo sapiens <400> 7 Ile His Ala Ser Ser Ser Leu Asn Gly Arg Ser Thr Glu Glu Val Lys 5 10 Pro Ile Asp Glu Asn Leu Gly Gln Thr Gly Lys Ser Ala Val Cys Ile 20 25 His Gln Asp Ile Asn Asp Asp His Val Glu Asp Val Thr Gly Ile Gln His Leu Thr Ser Asp Ser Asp Ser Glu Val Tyr Cys Asp Ser Met Glu 50 55 60 Gln Phe Gly Gln Glu Glu Ser Leu Asp Ser Phe Thr Ser Asn Asn Gly

75

65

Pro Phe Gln Tyr Tyr Leu Gly Gly His Ser Ser Gln Pro Met Glu Asn Ser Gly Phe Arg Glu Asp Ile Gln Val Pro Pro Gly Asn Gly Asn Ile 105 Gly Asn Met Gln Val Val Ala Val Glu Gly Lys Gly Glu Val Lys His Gly Glu Asp Gly Arg Asn Asn Ser Gly Ala Pro His Arg Glu Lys 135 Arg Gly Glu Thr Asp Glu Phe Ser Asn Val Arg Arg Gly Arg Gly 145 150 155 160 His Arg Met Gln His Leu Ser Glu Gly Thr Lys Gly Arg Gln Val Gly 165 170 Ser Gly Gly Asp Gly Glu Arg Trp Gly Ser Asp Arg Gly Ser Arg Gly 185 Ser Leu Asn Glu Gln Ile Ala Leu Val Leu Met Arg Leu Gln Glu Asp 195 200 Met Gln Asn Val Leu Gln Arg Leu Gln Lys Leu Glu Thr Leu Thr Ala 220 Leu Gln Ala Lys Ser Ser Thr Ser Thr Leu Gln Thr Ala Pro Gln Pro 225 240 Thr Ser Gln Arg Pro Ser Trp Trp Pro Phe Glu Met Ser Pro Gly Val Leu Thr Phe Ala Ile Ile Trp Pro Phe Ile Ala Gln Trp Leu Val Tyr 265

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20 25 30

Gln	Ala	Thr 35	Val	Gly	Asp	Cys	Asn 40	Thr	Glu	Lys	Pro	Gly 45	Met	Phe	Asp	
Leu	Lys 50	Gly	Arg	Ala	Lys	Trp 55	Asp	Ala	Trp	Asn	Glu 60	Leu	Lys	Gly	Met	
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Gly Met Phe Asp Leu Lys Gly Arg Ala Lys Trp Asp Ala Trp Asn Glu
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Leu Lys Gly Met Ser Lys Glu Glu Ala Met Lys Ala Tyr Ile Ala Lys
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aggaaaacac cattttcctc agttcagttt tcttctcctt ctttgatagt ataaatacac 180
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<213> Homo sapiens

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- Glu Met Ala Asp Thr Arg Ser Val His Glu Thr Arg Phe Glu Ala Ala 35 40 45
- Val Lys Val Ile Gln Ser Leu Pro Lys Asn Gly Ser Phe Gln Pro Thr 50 60
- Asn Glu Met Met Leu Lys Phe Tyr Ser Phe Tyr Lys Gln Ala Thr Glu 65 70 75 80
- Gly Pro Cys Lys Leu Ser Arg Pro Gly Phe Trp Asp Pro Ile Gly Arg 85 90 95
- Tyr Lys Trp Asp Ala Trp Ser Ser Leu Gly Asp Met Thr Lys Glu Glu
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- Ala Met Ile Ala Tyr Val Glu Glu Met Lys Lys Ile Ile Glu Thr Met 115 120 125
- Pro Met Thr Glu Lys Val Glu Glu Leu Leu Arg Val Ile Gly Pro Phe 130 135 140
- Tyr Glu Ile Val Glu Asp Lys Lys Ser Gly Arg Ser Ser Asp Ile Thr 145 150 155 160
- Ser Asp Leu Gly Asn Val Leu Thr Ser Ala Pro Asn Ala Lys Thr Val 165 170 175
- Asn Gly Lys Ala Glu Ser Ser Asp Ser Gly Ala Glu Ser Glu Glu Glu 180 185 190
- Glu Ala Gln Glu Glu Val Lys Gly Ala Glu Gln Ser Asp Asn Asp Lys 195 200 205
- Lys Met Met Lys Lys Ser Ala Asp His Lys Asn Leu Glu Val Ile Val 210 215 220
- Thr Asn Gly Tyr Asp Lys Asp Gly Phe Val Gln Asp Ile Gln Asn Asp 225 230 235 240
- Ile His Ala Ser Ser Ser Leu Asn Gly Arg Ser Thr Glu Glu Val Lys 245 250 255
- Pro Ile Asp Glu Asn Leu Gly Gln Thr Gly Lys Ser Ala Val Cys Ile 260 265 270
- His Gln Asp Ile Asn Asp Asp His Val Glu Asp Val Thr Gly Ile Gln 275 280 285
- His Leu Thr Ser Asp Ser Asp Ser Glu Val Tyr Cys Asp Ser Met Glu 290 295 300

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Met Met Leu Lys Phe Tyr Ser Phe Tyr Lys Gln Ala Thr Glu Gly Pro 50 55 60

Cys Lys Leu Ser Arg Pro Gly Phe Trp Asp Pro Ile Gly Arg Tyr Lys 65 70 75 80

Trp Asp Ala Trp Ser Ser Leu Gly Asp Met Thr Lys Glu Glu Ala Met
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Ile Ala Tyr Val Glu Glu Met Lys Lys Ile Ile Glu Thr Met Pro Met
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Thr Glu Lys Val Glu Glu Leu Leu Arg Val Ile Gly Pro Phe Tyr Glu 115 120 125

Ile Val Glu Asp Lys Lys Ser Gly Arg Ser Ser Asp Ile Thr Ser Asp 130 135 140

Leu Gly Asn Val Leu Thr Ser Thr Pro Asn Ala Lys Thr Val Asn Gly 145 150 155 160

Lys Ala Glu Ser Ser Asp Ser Gly Ala Glu Ser Glu Glu Glu Ala 165 170 175

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Ala	Lys 450	Ser	Ser	Thr	Ser	Thr 455	Leu	Gln	Thr	Ala	Pro 460	Gln	Pro	Thr	Ser
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Ser Phe Tyr Lys Gln Ala Thr Glu Gly Pro Cys Lys Leu Ser Arg Pro
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Gly Phe Trp Asp Pro Ile Gly Arg Tyr Lys Trp Asp Ala Trp Ser Ser
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Thr Ala Leu Gln Ala Lys Ser Ser Thr Ser Thr Leu Gln Thr Ala Pro
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Gly	Phe 50	Trp	Asp	Pro	Ile	Gly 55	Arg	Tyr	Lys	Trp	Asp 60	Ala	Trp	Ser	Ser
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Met	Lys	Lys	Ile	Ile 85	Glu	Thr	Met	Pro	Met 90	Thr	Glu	Lys	Val	Glu 95	Glu
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Ser	Gly	Arg 115	Ser	Ser	Asp	Ile	Thr 120	Ser	Val	Arg	Leu	Glu 125	Lys	Ile	Ser
Lys	Cys 130	Leu	Glu	Asp	Leu	Gly 135	Asn	Val	Leu	Thr	Ser 140	Thr	Pro	Asn	Ala
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				245					His 250					255	
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Lys Arg Gly Glu Thr Asp Glu Phe Ser Asn Val Arg Arg Gly Arg
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Ala Leu Gln Ala Lys Ser Ser Thr Ser Thr Leu Gln Thr Ala Pro Gln
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<212> PRT

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20 25 30

Ser Phe Tyr Lys Gln Ala Thr Glu Gly Pro Cys Lys Leu Ser Arg Pro 35 40 45

Gly Phe Trp Asp Pro Ile Gly Arg Tyr Lys Trp Asp Ala Trp Ser Ser 50 55 60

Leu Gly Asp Met Thr Lys Glu Glu Ala Met Ile Ala Tyr Val Glu Glu 65 70 75 80

Met Lys Lys Ile Ile Glu Thr Met Pro Met Thr Glu Lys Val Glu Glu 85 90 95

Leu Leu Arg Val Ile Gly Pro Phe Tyr Glu Ile Val Glu Asp Lys Lys
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Ser Gly Arg Ser Ser Asp Ile Thr Ser Val Arg Leu Glu Lys Ile Ser 115 120 125

Lys Cys Leu Glu Asp Leu Glu Glu Glu Glu Glu Glu Glu Glu Val Lys 130 135 140

Gly Ala Glu Gln Ser Asp Asn Asp Lys Lys Met Met Lys Lys Ser Ala 145 150 155 160

Asp His Lys Asn Leu Glu Val Ile Val Thr Asn Gly Tyr Asp Lys Asp 165 170 175

Gly Phe Val Gln Asp Ile Gln Asn Asp Ile His Ala Ser Ser Ser Leu 180 185 190

Asn Gly Arg Ser Thr Glu Glu Val Lys Pro Ile Asp Glu Asn Leu Gly 195 200 205

Gln Thr Gly Lys Ser Ala Val Cys Ile His Gln Asp Ile Asn Asp Asp 210 215 220

His Val Glu Asp Val Thr Gly Ile Gln His Leu Thr Ser Asp Ser Asp 225 230 235 240

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Gly Phe Trp Asp Pro Ile Gly Arg Tyr Lys Trp Asp Ala Trp Ser Ser
Leu Gly Asp Met Thr Lys Glu Glu Ala Met Ile Ala Tyr Val Glu Glu
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Met Lys Lys Ile Ile Glu Thr Met Pro Met Thr Glu Lys Val Glu Glu
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                                105
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Ser Gly Arg Ser Ser Asp Ile Thr Ser Asp Leu Gly Asn Val Leu Thr
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                            120
Ser Thr Pro Asn Ala Lys Thr Val Asn Gly Lys Ala Glu Ser Ser Asp
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Ser Gly Ala Glu Ser Glu Glu Glu Glu Ala Gln Glu Glu Val Lys Gly
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Glu Gln Ser Asp Asn Asp Lys Lys Met Met Lys Lys Ser Ala Asp His
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1368

190

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Val Gln Asp Ile Gln Asn Asp Ile His Ala Ser Ser Ser Leu Asn Gly
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Arg Ser Thr Glu Glu Val Lys Pro Ile Asp Glu Asn Leu Gly Gln Thr 210 215 220

Gly Lys Ser Ala Val Cys Ile His Gln Asp Ile Asn Asp Asp His Glu 225 230 235 240

Asp Val Thr Gly Ile Gln His Leu Thr Ser Asp Ser Asp Ser Glu Val 245 250 255

Tyr Cys Asp Ser Met Glu Gln Phe Gly Gln Glu Glu Ser Leu Asp Ser 260 265 270

Phe Thr Ser Asn Asn Gly Pro Phe Gln Tyr Tyr Leu Gly Gly His Ser 275 280 285

Ser Gln Pro Met Glu Asn Ser Gly Phe Arg Glu Asp Ile Gln Val Pro 290 295 300

Pro Gly Asn Gly Asn Ile Gly Asn Met Gln Val Val Ala Val Gly Lys 305 310 315 320

Gly Glu Val Lys His Gly Gly Glu Asp Gly Arg Asn Asn Ser Gly Ala 325 330 335

Pro His Arg Glu Lys Arg Gly Gly Glu Thr Asp Glu Phe Ser Asn Val 340 345 350

Arg Arg Gly Arg Gly His Arg Met Gln His Leu Ser Glu Gly Thr Lys 355 360 365

Gly Arg Gln Val Gly Ser Gly Gly Asp Gly Glu Arg Trp Gly Ser Asp 370 375 380

Arg Gly Ser Arg Gly Ser Leu Asn Glu Gln Ile Ala Leu Val Leu Met 385 390 395 400

Arg Leu Gln Glu Asp Ile Gln Asn Val Leu Gln Arg Leu Gln Lys Leu 405 410 415

Glu Thr Leu Thr Ala Leu Gln Ala Lys Ser Ser Thr Ser Thr Leu Gln 420 425 430

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tgctgcgtgt cataggtcca ttttatgaaa ttgtcgagga caaaaagagt ggcaggagtt 480
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Trp Gln Leu Glu Met Ala Asp Thr Arg Ser Val His Glu Thr Arg Phe
         35
Glu Ala Ala Val Lys Val Ile Gln Ser Leu Pro Lys Asn Gly Ser Phe
                         55
Gln Pro Thr Asn Glu Met Met Leu Lys Phe Tyr Ser Phe Tyr Lys Gln
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Ala Thr Glu Gly Pro Cys Lys Leu Ser Arg Pro Gly Phe Trp Asp Pro
Ile Gly Arg Tyr Lys Trp Asp Ala Trp Ser Ser Leu Gly Asp Met Thr
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Lys	Glu	Glu 115	Ala	Met	Ile	Ala	Tyr 120	Val	Glu	Glu	Met	Lys 125	Lys	Ile	Ile
Glu	Thr 130	Met	Pro	Met	Thr	Glu 135	Lys	Val	Glu	Glu	Leu 140	Leu	Arg	Val	Ile
Gly 145	Pro	Phe	Tyr	Glu	Ile 150	Val	Glu	Asp	Lys	Lys 155	Ser	Gly	Arg	Ser	Ser 160
Ąsp	Ile	Thr	Ser	Asp 165	Leu	Gly	Asn	Val	Leu 170	Thr	Ser	Thr	Pro	Asn 175	Ala
Lys	Thr	Val	Asn 180	Gly	Lys	Ala	Glu	Ser 185	Ser	Asp	Ser	Gly	Ala 190	Glu	Ser
Glu	Glu	Glu 195	Glu	Ala	Gln	Glu	Glu 200	Val	Lys	Gly	Ala	Glu 205	Gln	Ser	Asp
Asn	Asp 210	Lys	Lys	Met	Met	Lys 215	Lys	Ser	Ala	Asp	His 220	Lys	Asn	Leu	Glu
Va1 225	I1e	Va1	Thr	Asn	G1y 230	Tyr	Asp	Lys	Asp	G1y 235	Phe	Va1	G1n	Asp	11e 240
Gln	Asn	Asp	Ile	His 245	Ala	Ser	Ser	Ser	Leu 250	Asn	Gly	Arg	Ser	Thr 255	Glu
Glu	Val	Lys	Pro 260	Ile	Asp	Glu	Asn	Leu 265	Gly	Gln	Thr	Gly	Lys 270	Ser	Ala
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Ser 305	Met	Glu	Gln	Phe	Gly 310	Gln	Glu	Glu	Ser	Leu 315	Asp	Ser	Phe	Thr	Ser 320
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Gly	Asn	Ile 355	Gly	Asn	Met	Gln	Val 360	Val	Ala	Val	Glu	Gly 365	Lys	Gly	Glu
Val	Lys 370	His	Gly	Gly	Glu	Asp 375	Gly	Arg	Asn	Asn	Ser 380	Gly	Ala	Pro	His
Arg 385	Glu	Lys	Arg	Gly	Gly 390	Glu	Thr	Asp	Glu	Phe 395	Ser	Asn	Val	Arg	Arg 400
Gly	Arg	Gly	His	Arg 405	Met	Gln	His	Leu	Ser 410	Glu	Gly	Thr	Lys	Gly 415	Arg

Gln Val Gly Ser Gly Gly Asp Gly Glu Arg Trp Gly Ser Asp Arg Gly 420 425 Ser Arg Gly Ser Leu Asn Glu Gln Ile Ala Leu Val Leu Met Arg Leu 435 440 445 Gln Glu Asp Met Gln Asn Val Leu Gln Arg Leu Gln Lys Leu Glu Thr 455 Leu Thr Ala Leu Gln Ala Lys Ser Ser Thr Ser Thr Leu Gln Thr Ala 465 470 475 480 Pro Gln Pro Thr Ser Gln Arg Pro Ser Trp Trp Pro Phe Glu Met Ser 485 490 Pro Gly Val Leu Thr Phe Ala Ile Ile Trp Pro Phe Ile Ala Gln Trp 500 505 Leu Val Tyr Leu Tyr Tyr Gln Arg Arg Arg Lys Leu Asn Leu Glu 515 520 525

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<211> 539

<212> PRT

<213> Homo sapiens

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Trp Gln Leu Glu Met Ala Asp Thr Arg Ser Val His Glu Thr Arg Phe
35 40 45

Glu Ala Ala Val Lys Val Ile Gln Ser Leu Pro Lys Asn Gly Ser Phe 50 55 60

Gln Pro Thr Asn Glu Met Met Leu Lys Phe Tyr Ser Phe Tyr Lys Gln 65 70 75 80

Ala Thr Glu Gly Pro Cys Lys Leu Ser Arg Pro Gly Phe Trp Asp Pro 85 90 95

Ile Gly Arg Tyr Lys Trp Asp Ala Trp Ser Ser Leu Gly Asp Met Thr
100 105 110

Lys Glu Glu Ala Met Ile Ala Tyr Val Glu Glu Met Lys Lys Ile Ile 115 120 125

Glu Thr Met Pro Met Thr Glu Lys Val Glu Glu Leu Leu Arg Val Ile 130 135 140

Gly Pro Phe Tyr Glu Ile Val Glu Asp Lys Lys Ser Gly Arg Ser Ser 145 150 155 160

Asp Ile Thr Ser Val Arg Leu Glu Lys Ile Ser Lys Cys Leu Glu Asp 165 170 175

Leu Gly Asn Val Leu Thr Ser Thr Pro Asn Ala Lys Thr Val Asn Gly
180 185 190

Lys Ala Glu Gly Ser Asp Ser Gly Ala Glu Ser Glu Glu Glu Glu Ala 195 200 205

Gln Glu Glu Val Lys Gly Ala Glu Gln Ser Asp Asn Asp Lys Lys Met 210 215 220

Met Lys Lys Ser Ala Asp His Lys Asn Leu Glu Val Ile Val Thr Asn 225 230 235 240

Gly Tyr Asp Lys Asp Gly Phe Val Gln Asp Ile Gln Asn Asp Ile His
245 250 255

Ala Ser Ser Ser Leu Asn Gly Arg Ser Thr Glu Glu Val Lys Pro Ile
260 265 270

Asp Glu Asn Leu Gly Gln Thr Gly Lys Ser Ala Val Cys Ile His Gln 275 280 285

Asp Ile Asn Asp Asp His Val Glu Asp Val Thr Gly Ile Gln His Leu 290 295 300

Thr Ser Asp Ser Asp Ser Glu Val Tyr Cys Asp Ser Met Glu Gln Phe 305 310 315 320

Gly Gln Glu Glu Ser Leu Asp Ser Phe Thr Ser Asn Asn Gly Pro Phe 325 330 335

Gln Tyr Tyr Leu Gly Gly His Ser Ser Gln Pro Met Glu Asn Ser Gly 340 345 350

Phe Arg Glu Asp Ile Gln Val Pro Pro Gly Asn Gly Asn Ile Gly Asn 355 360 365

Met Gln Val Val Ala Val Glu Gly Lys Gly Glu Val Lys His Gly Gly 370 375 380

Glu Asp Gly Arg Asn Asn Ser Gly Ala Pro His Arg Glu Lys Arg Gly 385 390 395 400

Gly Glu Thr Asp Glu Phe Ser Asn Val Arg Arg Gly Arg Gly His Arg 405 410 415

Met Gln His Leu Ser Glu Gly Thr Lys Gly Arg Gln Val Gly Ser Gly 420 425 430

Gly Asp Gly Glu Arg Trp Gly Ser Asp Arg Gly Ser Arg Gly Ser Leu 435 440 445

Asn Glu Gln Ile Ala Leu Val Leu Met Arg Leu Gln Glu Asp Met Gln 450 455 460

Asn Val Leu Gln Arg Leu Gln Lys Leu Glu Thr Leu Thr Ala Leu Gln 465 470 475 480

Ala Lys Ser Ser Thr Ser Thr Leu Gln Thr Ala Pro Gln Pro Thr Ser

Gln Arg Pro Ser Trp Trp Pro Phe Glu Met Ser Pro Gly Val Leu Thr 500 505 510

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Tyr Gln Arg Arg Arg Lys Leu Asn Leu Glu 530 535

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aagtgaaagg agcagaacaa agtgataatg ataagaaaat gatgaagaag tcagcagacc 660
ataagaattt ggaagtcatt gtcactaatg gctatgataa agatggcttt gttcaggata 720
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Trp Gln Leu Glu Met Ala Asp Thr Arg Ser Val His Glu Thr Arg Phe
                             40
Glu Ala Ala Val Lys Val Ile Gln Ser Leu Pro Lys Asn Gly Ser Phe
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Gln Pro Thr Asn Glu Met Met Leu Lys Phe Tyr Ser Phe Tyr Lys Gln
Ala Thr Glu Gly Pro Cys Lys Leu Ser Arg Pro Gly Phe Trp Asp Pro
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<212> DNA

<213> Homo sapiens

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Ł

Gly Arg Gly His Arg Met Gln His Leu Ser Glu Gly Thr Lys Gly Arg 405 410 Gln Val Gly Ser Gly Gly Asp Gly Gly Arg Trp Gly Ser Asp Arg Gly 425 Ser Arg Gly Ser Leu Asn Glu Gln Ile Ala Leu Val Leu Met Arg Leu 440 Gln Glu Asp Met Gln Asn Val Leu Gln Arg Leu Gln Lys Leu Glu Thr 450 455 460 Leu Thr Ala Leu Arg Ala Lys Ser Ser Thr Ser Thr Leu Gln Thr Ala 470 475 465 Pro Gln Pro Thr Ser Gln Arg Pro Ser Trp Trp Pro Phe Glu Met Ser 485 490 Pro Gly Val Leu Thr Phe Ala Ile Ile Trp Pro Phe Ile Ala Gln Trp 500 505 Leu Val Tyr Leu Tyr Tyr Gln Arg Arg Arg Arg Lys Leu Asn Leu Glu 515 520 525

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Glu Val Lys Pro Ile Asp Glu Asn Leu Gly Gln Thr Gly Lys Ser Ala 260 265 270

Val Cys Ile His Gln Asp Ile Asn Asp Asp His Val Glu Asp Val Thr 275 280 285

Gly Ile Gln His Leu Thr Ser Asp Ser Asp Ser Glu Val Tyr Cys Asp 290 295 300

Ser Met Glu Gln Phe Gly Gln Glu Glu Ser Leu Asp Ser Phe Thr Ser 305 310 315 320

Asn Asn Gly Pro Phe Gln Tyr Tyr Leu Gly Gly His Ser Ser Gln Pro 325 330 335

Met Glu Asn Ser Gly Phe Arg Glu Asp Ile Gln Val Pro Pro Gly Asn 340 345 350

Gly Arg Asn Asn Ser Gly Ala Pro His Arg Glu Lys Arg Gly Glu 355 360 365

Thr Asp Glu Phe Ser Asn Val Arg Gly Arg Gly His Arg Met Gln 370 375 380

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440
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Gln Pro Thr Asn Glu Met Met Leu Lys Phe Tyr Ser Phe Tyr Lys Gln 70 75

Ala Thr Glu Gly Pro Cys Lys Leu Ser Arg Pro Gly Phe Trp Asp Pro 85

Ile Gly Arg Tyr Lys Trp Asp Ala Trp Ser Ser Leu Gly Asp Met Thr 105

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Pro	Phe	Glu	Met 420	Ser	Pro	Gly	Val	Leu 425	Thr	Phe	Ala	Ile	Ile 430	Trp	Pro
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Trp Gln Leu Glu Met Ala Asp Thr Arg Ser Val His Glu Thr Arg Phe
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Ile	Gly	Arg	Туг 100	Lys	Trp	Asp	Ala	Trp 105	Ser	Ser	Leu	Gly	Asp 110	Met	Thr
Lys	Glu	Glu 115	Ala	Ile	Ile	Ala	Tyr 120	Val	Glu	Glu	Met	Lys 125	Lys	Ile	Ile
Glu	Thr 130	Met	Pro	Met	Thr	Glu 135	Lys	Val	Glu	Glu	Leu 140	Leu	Arg	Val	Ile
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Leu	Gly	Asn	Val 180	Leu	Thr	Ser	Thr	Pro 185	Asn	Lys	Thr	Val	Asn 190	Gly	Lys
Ala	Glu	Ser 195	Ser	Asp	Ser	Gly	A1a 200	Glu	Ser	Glu	Glu	G1u 205	Glu	Ala	Gln
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Ile	Asn 290	Asp	Asp	His	Val	Glu 295	Asp	Val	Thr	Gly	Ile 300	Gln	His	Leu	Thr
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Gln	Glu	Glu	Ser	Leu 325	Asp	Ser	Phe	Thr	Ser 330	Asn	Asn	Gly	Pro	Phe 335	Gln
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His Leu Ser Glu Gly Thr Lys Gly Arg Gln Val Gly Ser Gly Gly Asp
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Gly Glu Arg Trp Gly Ser Asp Arg Gly Ser Arg Gly Ser Leu Asn Glu
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His Ile Ala Leu Val Leu Met Arg Leu Gln Glu Asp Met Gln Asn Val
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Leu Gln Arg Leu Gln Lys Leu Glu Thr Leu Thr Ala Leu Gln Ala Lys
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                                        475
Ser Ser Thr Ser Thr Leu Gln Thr Ala Pro Gln Pro Thr Ser Gln Arg
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                                    490
Pro Ser Trp Trp Pro Phe Glu Met Ser Pro Gly Val Leu Thr Phe Ala
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Ala Ala Val Lys Val Ile Gln Ser Leu Pro Lys Asn Gly Ser Phe Gln 50 60

Pro Thr Asn Glu Val Met Leu Lys Phe Tyr Ser Phe Tyr Lys Gln Ala 65 70 75 80

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Pro Phe Tyr Glu Ile Val Glu Asp Lys Lys Ser Gly Arg Ser Ser Asp 145 150 155 160

Ile Thr Ser Val Arg Leu Glu Lys Ile Ser Lys Cys Leu Glu Asp Leu 165 170 · 175

Gly Asn Val Leu Thr Ser Thr Pro Asn Ala Lys Thr Val Asn Gly Lys
180 185 190

Ala Glu Ser Ser Asp Ser Gly Ala Glu Ser Glu Glu Glu Glu Ala Gln 195 200 205

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490

Cys Cys Cys Leu Ile Pro Ala Asp Arg Pro Trp Asp Arg Gly Gln His 25 Trp Gln Leu Glu Met Ala Asp Thr Arg Ser Val His Glu Thr Arg Phe 40 Glu Ala Ala Val Lys Val Ile Gln Ser Leu Pro Lys Asn Gly Ser Phe Gln Pro Thr Asn Glu Met Met Leu Lys Phe Tyr Ser Phe Tyr Lys Gln Ala Thr Glu Gly Pro Cys Lys Leu Ser Arg Pro Gly Phe Trp Asp Pro 95 Ile Gly Arg Tyr Lys Trp Asp Ala Trp Ser Ser Leu Gly Asp Met Thr Lys Glu Glu Ala Met Ile Ala Tyr Val Glu Glu Met Lys Lys Ile Ile 120 Glu Thr Met Pro Met Thr Glu Lys Val Glu Glu Leu Leu Arg Val Ile 130 135 Gly Pro Phe Tyr Glu Ile Val Glu Asp Lys Lys Ser Gly Arg Ser Ser Asp Ile Thr Ser Asp Leu Gly Asn Val Leu Thr Ser Thr Pro Asn Ala 170 Lys Thr Val Asn Gly Lys Ala Glu Ser Ser Asp Ser Gly Ala Glu Ser Glu Glu Glu Glu Ala Gln Glu Glu Val Lys Gly Ala Glu Gln Ser Asp Asn Asp Lys Lys Met Met Lys Lys Ser Ala Asp His Lys Asn Leu Glu 210 215 Val Ile Val Thr Asn Gly Tyr Asp Lys Asp Gly Phe Val Gln Asp Ile . 225 230 235 Gln Asn Asp Ile His Ala Ser Ser Ser Leu Asn Gly Arg Ser Thr Glu 250 Glu Val Lys Pro Ile Asp Glu Asn Leu Gly Gln Thr Gly Lys Ser Ala 260 265 Val Cys Ile His Gln Asp Ile Asn Asp Asp His Val Glu Asp Val Thr 280 Gly Ile Gln His Leu Thr Ser Asp Ser Asp Ser Glu Val Tyr Cys Asp 290 295 300 Ser Met Glu Gln Phe Gly Gln Glu Glu Ser Leu Asp Ser Phe Thr Ser 305 310 315 320

Asn Asn Gly Pro Phe Gln Tyr Tyr Leu Gly Gly His Ser Ser Gln Pro 325 330 Met Glu Asn Ser Gly Phe Arg Glu Tyr Ile Gln Val Pro Pro Gly Asn 345 Gly Asn Ile Gly Asn Met Gln Val Val Ala Val Glu Gly Lys Gly Glu 355 360 Val Lys His Gly Gly Glu Asp Gly Arg Asn Asn Ser Gly Ala Pro His Arg Glu Lys Arg Gly Gly Glu Thr Asp Glu Phe Ser Asn Val Gly Arg 385 390 395 400 Gly Arg Gly His Arg Met Gln His Leu Ser Glu Gly Thr Lys Gly Arg 405 410 Gln Val Gly Ser Gly Gly Asp Gly Glu Arg Trp Gly Ser Asp Arg Gly Ser Arg Gly Ser Leu Asn Glu Gln Ile Ala Leu Val Leu Met Arg Leu 435 440 445 Gln Glu Asp Met Gln Asn Val Leu Gln Arg Leu Gln Lys Leu Glu Thr 455 460 Pro Thr Ala Leu Gln Ala Lys Ser Ser Thr Ser Thr Leu Gln Thr Ala 465 470 475 480 Pro Gln Pro Thr Ser Gln Arg Pro Ser Trp Trp Pro Phe Glu Met Ser 485 490 Pro Gly Val Leu Thr Phe Ala Ile Ile Trp Pro Phe Ile Ala Gln Trp 505

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